

REMARKS/ARGUMENTS

The present Amendment is filed along with a Request for Continued Examination (RCE) in the present application. On July 12, 2004, the Examiner issued an Advisory Action apparently asserting that the Amendment filed on May 14, 2004 was not entered in this application. Herewith, Applicant respectfully requests continued examination and requests that the enclosed Amendment be entered prior to such examination. The present Amendment therefore responds to the substantive issues set forth in the Office Action dated April 9, 2004.

Claims 1-31 have been previously canceled.

Claims 32-67 remain pending.

Claims 68-81 are added.

Formal Matters

The drawings have been objected to as failing to depict a "U-shaped supporting frame", as the supporting frame shown in Fig. 1 is closed by the area shaped cross stay (1"). By the present Amendment, the claims have been amended to recite "a supporting frame comprising a U-shaped portion comprising a hinge support forming U-limb, a lock supporting form the other U-limb, and a door bottom that interconnects the hinge support and lock support." With these amendments, the supporting frame is believed to be properly recited in view of Fig. 1. No changes to the drawings are believed necessary. Withdrawal of the objection to the drawings is respectfully requested.

Claims 38 and 39 have been objected to as being substantively duplicative. By the present Amendment, claim 39 is cancelled.

Claim 60 has been objected to because it improperly depended from cancelled claim 1. Claim 60 has been amended to properly depend from claim 32.

Claim Rejections under 35 USC §112

Claims 33-35, 40, 42, 56 and 63-65 have been rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. By the present

amendment, applicant has amended the claims to more particularly point out the subject matter of the present invention and render same allowable over the applied references.

Claim 33 has been amended to more particularly define the “alloy part” as comprising a sheet of aluminum. Claim 34 has been amended to recite that the sheet of aluminum has a thickness of “approximately 1.2 millimeters to approximately 1.8 millimeters”. Claim 38 has been amended to positively claim the area shaped cross stay and remove the reference to the “basic U-shape”. Claim 56 has been amended to depend from claim 53, and as such provides proper antecedent basis for “the frame reinforcement part (11d)”. Claim 63 has been amended to positively recite a “lock support”.

Claim Rejections under 35 USC §103(a)

Claims 32, 33, 36-40, 45-47, 51, 52, 57, 59, 60 and 66 have been rejected under 35 USC §103(a) as being unpatentable of Widrig et al U.S. Patent No. 4,876,825 in view of German Patent Publication No. 196 16 788. Claims 34 and 35 have been rejected under 35 USC §103(a) as being unpatentable over Widrig et al ‘825 in view German Patent Publication No. 196 16 788. Claims 41, 42-44, 48-50, 53-56, 58, 61 and 62 have been rejected under 35 USC §103(a) as being unpatentable over Widrig et al ‘825 in view of German Patent Publication No. 196 16 788, and further in view of Cho U.S. Patent No. 6,367,863. Claims 63-65 have been rejected under 35 USC §103(a) as being unpatentable over Widrig et al ‘825 in view of German Patent Publication No. 196 16 788 and Cho ‘863. Claim 67 is rejected under 35 USC §103(a) as being unpatentable over Widrig et al ‘825 in view of German Patent Publication No. 196 16 788 and Rashid et al U.S. Patent No. 5,536,060.

In the Office Action, the Examiner states that the applicant’s arguments concerning how the components of the vehicle door are made are not persuasive since the claims are product-by-process claims. By the present Amendment, the independent claims of the present application have been further amended to specify that the supporting frame is a non-cast one-piece light metal or light metal alloy sheet selected from the group consisting of a pressed sheet and a deep drawn sheet.

The Widrig et al '825 reference teaches a supporting frame (11, 12, 13) that may be made in one piece and formed of aluminum alloy materials. However, for this arrangement, Widrig et al '825 requires that the supporting frame be produced from casting and that the strut (14) is cast into the casting during the time when the latter is produced. Col. 2, lines 33-38.

The Widrig et al '825 reference does not teach a supporting frame that is non-cast and that comprises a light metal or light metal alloy sheet selected from the group consisting of a pressed sheet and a deep drawn sheet. In contrast, the supporting frame (11, 12, 13) taught by Widrig et al '825 is a cast part, which does not consist of a sheet of light metal or light metal alloy.

In addition, applicant respectfully disagrees with the Examiner's conclusion that the claims at issue are product-by-process claims. Along with the following arguments, Applicant presently submits a Declaration under 37 CFR §1.132 of Holly Sutherland, a Mechanical Engineer, and one skilled in the art relevant to the present application. With the following arguments, and the enclosed Declaration, Applicant clearly demonstrates that the claim limitations "pressed sheet" and "deep drawn sheet" are structural limitations and define structures that are significantly different and distinguishable over the cast structure taught by the prior art. In addition, the inventive door of the present application can only be defined by the present claim language, and therefore according to the MPEP, these limitations are not product-by-process limitations. As detailed below, the Applicant respectfully requests that the Examiner reconsider the refusal based upon product-by-process theory, or otherwise support his rejection with an explanation and documentary evidence. MPEP §2144.3.

MPEP §2113 states that:

The structure implied by the process steps should be considered when assessing the patentability of product by process claims over the prior art, **especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics of the final product.** See, e.g., *In re Garnero*, 412 F. 2d

276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding “interbonded by interfusion” to limit structure of the claimed composite and noting that terms such as ‘welded’, ‘intermixed’, ‘ground in place’, ‘press fitted’, and ‘etched’ are capable of construction as structural limitations).

Independent claims 32, 63, 66 and 67 positively recite the supporting frame as comprising a one piece light metal or light metal alloy sheet selected from the group consisting of a pressed sheet and a deep drawn sheet. By this language, applicant does not intend to set forth product-by-process limitations. Rather, the claim elements “pressed sheet” and “deep drawn sheet” set forth distinctive structural characteristics of the claimed product. In fact, in addition to the respective processes being different, i.e. casting, pressing or deep drawing, the respective products are different, as discussed thoroughly below. In addition, the “pressed” or “deep drawn” nature of the supporting frame of the present invention can only be descriptively defined by the type of manufacturing process by which it is made. Thus, according to the MPEP, the structure implied by the elements “pressed sheet” and “deep drawn sheet” should be considered when assessing the patentability of the claims. §2113.

Casting

Casting is the solidification of liquid metal into a solid shape. Liquid metal is poured into a mold cavity, where it transforms, or solidifies into a solid of the desired shape. Parts that are cast will inherently have internal and surface defects. Non-metallic particles, or inclusions, can be created by oxidation of the liquid metal, or particles entrained from slag, dirt, or refractories when the metal is fed into the mold. Inclusions can initiate cracks when a part is in service. In addition, shrinkage cavities are often created by volumetric shrinkage of the metal during solidification. This type of defect is especially dangerous when the cavities are hidden internally. Gas porosity may also occur when gas bubbles evolved during the solidification become trapped to form small round voids inside the casting. If these voids reach the metal surface and are exposed to the environment, they will oxidize and become permanent. The solidification process also often produces different compositions in different parts of the casting -- this is called

segregation. In addition, residual stress and cracks are often generated in a casting as a result of thermal contraction, or strain, that accompanies cooling of metal in the solid state.

Many of the inherent defects discussed above are difficult to detect and often impossible to correct during subsequent processing and can adversely affect the structural strength and other properties of the cast part. If strength and toughness are critical, then cast parts often must be subjected to further processing to improve their properties. This can increase the cost and labor involved in creating the door frame.

Deep Drawing or Pressing

In contrast to the teachings of the prior art, the present application claims a one piece supporting frame that is either a pressed sheet or a deep drawn sheet. Deep drawn and pressed sheets are the result of a mechanical deformation process, whereby a sheet of metal is compressed and bent to form the desired part. Both deep drawn sheets and pressed sheets will inherently be stronger and overcome many of the defects created during casting, as defined above. During the deep drawing and pressing processes, undesirable internal microstructures are broken down and internal cracks welded together by the deformation process. Deep drawn and pressed sheets are processed such that the grains of the metal sheet are elongated in the working direction. Therefore the deep drawing and pressing processes greatly increase the strength and toughness of the sheet, particularly in the direction of elongation, due to strain hardening.

Conclusion

The vehicle door of the present invention, which comprises a one piece light metal or light metal alloy supporting frame that is either a pressed sheet or a deep drawn sheet is taught nowhere in the prior art. The Widrig et al '825 reference in fact teaches directly against such a concept by explicitly requiring that if a vehicle door is created in one piece, it be a cast part. The remaining references cited by the Examiner also fail to teach or suggest a one piece light metal or light metal alloy supporting frame that is either a pressed sheet or a deep drawn sheet.

As discussed above, providing a one piece light metal or light metal alloy supporting frame that is either a pressed sheet or a deep drawn sheet provides substantial structural improvement over the vehicle doors taught by the prior art. The invention also lessens the cost of manufacture by eliminating later refining processes required during the casting process. As such, the present invention is a substantial improvement over the prior art and is not obvious in light thereof.

Herewith Applicant submits a Declaration Under 37 CFR §1.132 of Holly A. Sutherland attesting to the fact that pressed and deep drawn sheets are structurally different products from cast parts. The Examiner is thus respectfully requested to recognize this fact, or otherwise present evidence in support of his rejection based upon product-by-process theory. MPEP §2144.3.

New Claims 68 and 69

Claims 68 and 69 have been added and depend directly and indirectly, respectively, from claim 32. Claim 68 recites that the inner window gutter profile is a multi-chamber box section extrusion profile that is designed to prevent collapse transverse to the longitudinal direction of the inner window gutter profile during a collision. Such a design is neither taught nor suggested by the prior art. Claim 69 further recites that at least two of the chambers are separated by stays. Again, this design is neither taught nor suggested by the prior art.

Claims 68 and 69 are thus believed allowable.

New Independent Claim 70

Independent claim 70 has been added to further define the lightweight door for motor vehicles of the present invention. In addition to many of the aspects discussed above, the lightweight door for motor vehicles of claim 70 comprises a hinge reinforcement part that is connected to the hinge support and upper and lower hinge point strengthening plates that are connected to the hinge reinforcement part for absorbing forces which are introduced to the supporting frame. Such an arrangement is neither taught nor suggested by the prior art.

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New Dependent Claims 71-81

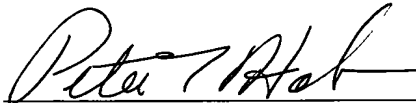
Dependent claims 71-81 depend directly or indirectly from claim 70, and are thus believed allowable for the reasons stated above as well as the detailed subject matter recited therein.

Conclusion

The present application is thus believed in condition for allowance with claims 32-38 and 40-81, and such action is respectfully requested.

Respectfully submitted,

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